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File: USPT

Jan 1, 2002

US-PAT-NO: 6336073

DOCUMENT-IDENTIFIER: US 6336073 B1

TITLE: Information terminal device and method for route guidance

DATE-ISSUED: January 1, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ihara; Yasuhiro	Kobe			JP
Suzuki; Akihiro	Neyagawa			JP
Nakano; Nobuyuki	Toyonaka			JP
Fukuda; Hisaya	Sakai			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
Matsushita Electric Industrial Co., Ltd.	Osaka-fu			JP		03

APPL-NO: 09/626122 [\[PALM\]](#)

DATE FILED: July 26, 2000

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	11-215797	July 29, 1999

INT-CL-ISSUED: [07] [G01 C 21/00](#), [G08 G 1/096](#)

US-CL-ISSUED: 701/202; 701/208, 701/211, 340/990

US-CL-CURRENT: [701/202](#); [340/990](#), [701/208](#), [701/211](#)

FIELD-OF-CLASSIFICATION-SEARCH: 701/202, 701/201, 701/208, 701/209, 701/210, 701/211, 701/212, 340/988, 340/990, 340/995

See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

Search ALL

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PAT-NO

ISSUE-DATE

PATENTEE-NAME

US-CL



[5543789](#)

August 1996

Behr et al.

340/995

<input type="checkbox"/>	<u>5913918</u>	June 1999	Nakano et al.	701/208
<input type="checkbox"/>	<u>5945976</u>	August 1999	Iwamura et al.	345/139
<input type="checkbox"/>	<u>6006161</u>	December 1999	Katou	701/212
<input type="checkbox"/>	<u>6040824</u>	March 2000	Maekaw et al.	345/173
<input type="checkbox"/>	<u>6041281</u>	March 2000	Nimura et al.	701/211
<input type="checkbox"/>	<u>6073075</u>	June 2000	Kondou et al.	701/203
<input type="checkbox"/>	<u>6115669</u>	September 2000	Watanabe et al.	701/209
<input type="checkbox"/>	<u>6121900</u>	September 2000	Takishita	340/995
<input type="checkbox"/>	<u>6182010</u>	January 2001	Berstis	701/211
<input type="checkbox"/>	<u>6199014</u>	March 2001	Walker et al.	701/211
<input type="checkbox"/>	<u>6202022</u>	March 2001	Ando	701/200
<input type="checkbox"/>	<u>6202026</u>	March 2001	Nimura et al.	701/211

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
9-229694	September 1997	JP	
10-103977	April 1998	JP	

ART-UNIT: 3661

PRIMARY-EXAMINER: Nguyen; Tan

ATTY-AGENT-FIRM: Wenderoth, Lind & Ponack, L.L.P.

ABSTRACT:

In an information terminal device, a processor receives route information on a route from a start point to a destination and guidance information required for route guidance, in accordance with a standard communications protocol. The processor guides the route from the start point to the destination through an information presentation part by using first cartographic data having a basis on the received route information and the guidance information. The processor requests, as required, a specific information service center for point information in a tag format showing details of each important point (POI) on the route through an information request part. As a result, the processor receives the point information on the important point from the information service center in accordance with the standard communications protocol. The processor presents the received point information on the important point simultaneously with a map based on the first cartographic data to clearly indicate each of the important points on the route. With the aid of the tag format, the information terminal device is capable of receiving, using the standard communications protocol, various information in the suitable format for the route guidance.

20 Claims, 28 Drawing figures

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L9: Entry 2 of 2

File: USPT

May 8, 2001

US-PAT-NO: [6230098](#)

DOCUMENT-IDENTIFIER: US 6230098 B1

TITLE: Map data processing apparatus and method, and map data processing system

DATE-ISSUED: May 8, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ando; Kouichi	Susono			JP
Ito; Toru	Nagoya			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
Toyota Jidosha Kabushiki Kaisha	Aichi-ken			JP		03

APPL-NO: 09/144262 [\[PALM\]](#)

DATE FILED: August 31, 1998

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	9-251571	September 17, 1997

INT-CL-ISSUED: [07] [G01](#) [C](#) [21/00](#)

US-CL-ISSUED: 701/208; 701/211, 340/990, 340/995

US-CL-CURRENT: [701/208](#); [340/990](#), [340/995.18](#), [701/211](#)

FIELD-OF-CLASSIFICATION-SEARCH: 701/208, 701/212, 701/211, 701/210, 340/995, 340/990

See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	4951212	August 1990	Kurihara et al.	
<input type="checkbox"/>	5406493	April 1995	Goto et al.	701/208
<input type="checkbox"/>	5469360	November 1995	Ihara et al.	701/208

<input type="checkbox"/>	<u>5729731</u>	March 1998	Yajima et al.	707/3
<input type="checkbox"/>	<u>5731978</u>	March 1998	Tamai et al.	701/201
<input type="checkbox"/>	<u>5951620</u>	September 1999	Ahrens et al.	701/200
<input type="checkbox"/>	<u>6075467</u>	June 2000	Ninagawa	340/995

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
41 11 147 A1	October 1992	DE	
195 44 382 A1	May 1997	DE	
07261661	October 1995	JP	

ART-UNIT: 361

PRIMARY-EXAMINER: Cuchlinski, Jr.; William A.

ASSISTANT-EXAMINER: Hernandez; Olga

ATTY-AGENT-FIRM: Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P.

ABSTRACT:

On a vehicle side, map data storage section stores map data, which is to be updated by using the latest map data transmitted from an information center. The map data includes map data of a number of types, such as landmark information, drawing data, route calculation data. For drawing data and route calculation data, the information center sends differential data indicative of difference between the latest data held by the center and the map data held by the vehicle. The differential data of the drawing data is stored separately from extant data in the storage section by generating processing section. The differential data of the route calculation data is combined with extant data by restructure processing section to thereby restructure route calculation data. On the other hand, for landmark data, the center transmits full data, which is data corresponding to the entire latest map data, rather than only the difference. The full data is used to overwrite the extant data. As described above, an appropriate update process is performed according to the type of map data.

14 Claims, 9 Drawing figures

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